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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Robert E. Thompson et al.
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APPELLANTS' BRIEF PURSUANT TO 37 C.F.R. § 1.192

This brief, submitted in triplicate, and fee of $500.00 for a large entity under 37 C.F.R. § 1.17(c), are submitted in furtherance of the Notice of Appeal filed on October 26, 2004 in the above-referenced application.

A petition and fee for a two month extension of time also is enclosed herewith. Any additional fees required for consideration of this paper are authorized to be charged to the deposit account identified on the two copies of the Transmittal of Appeal Brief filed herewith.

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I. Real Party in Interest (37 C.F.R. § 1.192(c)(1))

The real party in interest in this application is the assignee, International Surface Preparation Group, Inc., a Delaware corporation with a place of business at 603 Park Point Drive Suite 200, Golden, CO 80401.

II. Related Appeals and Interferences (37 C.F.R. § 1.192(c)(2))

There are no other appeals or interferences known to the appellant, the appellant's legal representatives, or the assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. § 1.192(c)(3))

Claims 23-25, 29-38, 42-47, and 50-59 are pending in this application, of which claims 23, 24, and 45 are independent claims. Each of these claims was finally rejected in an Office Action dated May 6, 2004. The rejections of all claims are appealed. A copy of the claims, as pending, is attached as an Appendix.

The status of the claims is as follows:

A. claims 23-25, 31, 32, 42, 44-47, 50, 53, 54, 56, 58, and 59 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,810,045 to Evans;

B. claims 24, 25, 29, 31-38, 42, 44-47, 56, and 58-59 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,542,873 to Shank, in view of U.S. Patent No. 3,476,440 to Schmidt or Evans; and

C. claims 30, 51, 52, 55, and 57 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shank, in view of Schmidt or Evans, further in view of U.S. Patent No. 4,335,744 to Bey.

IV. Status of the Amendments (37 C.F.R. § 1.192(c)(4))

No claim amendments have been filed subsequent to the Final Office Action.

V. Summary of the Invention (37 C.F.R. § 1.192(c)(5))

The invention involved in this Appeal is directed generally to media control and, more specifically, to media control valves used to control the flow of a media into a fluid stream as part of an apparatus for treatment of a surface, such as by blasting. By "media" it is meant a material or materials that may be desired to be added to another material or materials, including various types of solid, particulate, and blasting media, such as metal shot. (Application, p. 4.)

In one embodiment, the inventive media control valve **10** includes a valve body **20** having a media inlet **22** and a media outlet **24**. (Id., p. 4, ll. 20-23.) A plunger **30** is positioned within the valve body **20** and is connected to a piston **42** positioned within the housing **40**. (Id., p. 4, l. 33-p. 5, l. 6.) A base **60** is connected to the valve body **20** such that it communicates with the media outlet **24**. (Id., p. 5, ll. 5-6.) The media control valve **10** may further include a sleeve **32** disposed between the valve body **20** and the plunger **30**. (Id., p. 4, l. 33-p. 5, l. 6.) This sleeve **32** may contain a media opening **34**. (Id., p. 5, l. 2-3.)

The plunger **30** is constructed such that it may move within the valve body **20** and selectively expose the media opening **34** in the sleeve **23**, allowing the media to flow from the media inlet **22** to the media outlet **24**. (Id., p. 6, ll. 22-26.) The movement of the piston **42** and plunger **30** is controlled by pressure applied to a drive chamber **44**. (Id., p. 9, ll. 16-18.)

VI. Issues (37 C.F.R. § 1.192(c)(6))

A. Whether the rejections of claims 23-25, 31, 32, 42, 44-47, 50, 53, 54, 56, 58, and 59 as allegedly being anticipated by Evans should be reversed.

B. Whether the rejections of claims 24, 25, 29, 31-38, 42, 44-47, 56, and 58-59 as allegedly being obvious over Shank in combination with Schmidt or Evans should be reversed.

C. Whether the rejections of claims 30, 51, 52, 55, and 57 as allegedly being obvious over Shank in combination with Schmidt or Evans, and further in combination with Bey, should be reversed.

VII. Grouping of Claims (37 C.F.R. § 1.192(c)(7))

A. Group I: For purposes of this appeal only, claims 23 and 50-54 (all of which contain the limitations of independent claim 23) stand or fall together. Claim 23 is representative.

B. Group II: For purposes of this appeal only, claims 24, 25, 29-38, 42-44, and 55 (all of which contain the limitations of independent claim 24) stand or fall together. Claim 24 is representative.

C. Group III: For purposes of this appeal only, claims 45-47 and 56-59 (all of which contain the limitations of independent claim 45) stand or fall together. Claim 45 is representative.

VIII. Argument (37 C.F.R. § 1.192(c)(8)(iv))

Applicant respectfully requests that the Examiner's final rejection of claims 23-25, 29-38, 42-47, and 50-59 be reversed. The claims as presented are believed to be in allowable condition.

A. Discussion of the Prior Art

Evans discloses a media control valve in which the media is delivered ("pumped") to a gas stream by means of a "metering piston" that is driven open by a blast of pressurized air and then driven closed by an opposing blast of pressurized air and/or the force of a spring. (See col. 10, l. 18-col. 11, l. 6.) Evans is actually directed to a particular arrangement of two seals and an exhaust port located between the seals. (See col. 3, ll. 22-34; col. 11, ll. 7-61.) Evans does not disclose an arrangement in which the media opening may be selectively opened.

Shank discloses a media valve in which a piston is connected to a valve stem. Compressed air applied to the lower surface of the piston moves the valve stem out of the media passage, allowing the flow of media. When the air pressure is removed from the lower surface of the piston, a spring forces the piston and valve stem down into the media passage, stopping the flow of media. (See col. 7, ll. 52-62.) In Shank, "valve stem 45 is an on-off valve which when retracted will allow free passage of the media . . . and when closed will stop all passage of media." (Col. 7, l. 65-col. 8, l. 2.)

Schmidt discloses a media control valve that includes a threaded shaft that can be rotated, by hand, to move a valve element incrementally into and out of a media discharge tube so as to control the amount of media being delivered to an air flow tube. (See col. 3, ll. 30-53.)

Bey discloses a safety relief valve which, according to the Examiner, includes a contaminant isolation region (the subject of several dependent claims in this application). Bey is not believed to be pertinent other than that it may disclose a contaminant isolation region.

B. The Rejections of the Group I Claims Should Be Reversed.

The Final Office Action rejected Group I claims 23, 50, 53, and 54 as being anticipated by Evans. The office action also rejected Group I claims 51 and 52 as being obvious over Shank, in view of Schmidt et al., or Evans, and further in view of Bey. There is no § 103 rejection of independent claim 23.

These rejections should be reversed.

1. Evans Does Not Anticipate the Group I Claims.

Applicant respectfully submits that Evans does not anticipate the Group I claims because Evans does not disclose an "air-actuated closing member" that "provide[s] all metering positions from a fully closed position to a fully open position," an element that is found in each of the Group I claims.

It is true that the valve of Evans is opened by the introduction of pressurized air and that the pressurized air drives piston 100 and plunger 94 in a direction that opens the valve to permit the flow of media though the media outlet. It is not the case, however, that Evans is constructed and arranged to provide all metering positions from a fully closed position to a fully open position.

Evans is an "on/off" or "open/closed" type of valve. Application of the air pressure opens the valve fully, permitting the flow of media, and removal of the pressure closes the valve fully, stopping the flow of media.

As described in the specification:

> [T]he high pressure air 113 delivered via air flow tube 110 to the lower surface 106 of the drive piston 100 should have a pressure that is sufficient to quickly force drive piston 100 "upward" i.e., toward the "top" 109 of the drive piston chamber 101.

(col. 10, ll. 18-24 (emphasis added));

> Since, the metering piston 94 and the drive piston 100 are rigidly connected to each other (via connector 95), when a burst of high pressure air enters air flow tube 110 and impinges on the lower surface 106 of drive piston 100, metering piston 94 will be "pulled out of" the particle entrainment air flow passage 89 e.g., the metering piston 94 will be pulled away from the particle entrainment air flow tube 92. In a more specific embodiment of this invention, the metering piston 94 will be pulled out of both an opening in the metering piston sleeve and out of an opening 112 that, when not blocked or occupied by the metering piston 94, allows particle flow between the particulate material receiving port 90 and a particulate material exit port 114 that leads into particle entrainment gas flow tube 92.

(col. 10, ll. 42-49 (emphasis added)); and

> [T]he upward movement of drive piston 100 is shown being resisted by a spring 115 that is located between the top surface 116 of drive piston 100 and the top 109 of the drive piston chamber 101. This spring 115 provides a force that—when the air pressure introduced in the drive piston chamber 101 via inlet 110 is reduced or eliminated—quickly forces the drive piston 100 back to its original position near the chamber wall 118 that separates drive piston chamber 101 from metering piston chamber 99.

(col. 10, l. 61-col. 11, l. 2 (emphasis added)).

From these passages, it is clear that the valve of Evans is driven completely open by the pressurized air 113 and then driven completely closed by spring 115 and/or pressurized air 113'. There is no provision in Evans for controlling the degree to which the valve is open.

The piston of Evans is referred to as a "metering piston" because it operates to "meter" the release of the media into the air stream. In the Evans valve, however, the metering is effected by a "pumping" action caused by repeatedly fully opening and fully closing the valve, not by maintaining the valve in a constant, partially open position, as in applicant's invention. As described in the specification:

> The metering piston 94 serves to (1) pump particulate material from the bore 91 of receiving port 90 to the bore 93 of particle entrainment gas flow tube 92 (with or without the aid of a positive pressure flowing from the hopper 12 to gas flow tube 92), or to, (2) block flow of particulate material between the bore 91 of the receiving port 90 and the bore 93 of particle entrainment gas flow tube 92.

(Col. 12, ll. 10-16.)

The Final Office Action states, at page 2, that the closing member of Evans is constructed and arranged to provide all metering positions from a fully closed position to a fully open position "dependent on the value of the fluid pressure supplied to port 108 and or 108.'" There is no support for this statement in Evans and, in fact, it is not true, as described above. Evans

"meters" the flow by "pumping," i.e., rapidly opening and closing the valve. There is nothing in Evans that teaches controlling the rate of particulate flow by opening the valve incrementally and leaving it at that incrementally open position.

The Final Office Action makes reference to the description in Evans of "air flow devices for regulating the introduction of air" that are "well known to the valve making and air flow regulation arts," as showing incremental metering. This element of the Evans device is merely a common air pressure regulator that would function to provide a constant source from a variable pressure tank. This is not a mechanism for providing variable pressure to incrementally open the valve, and as much is clear from (a) the failure of Evans to describe what would be a critical feature of the device in any more detail, and (b) the fact that the use of such a device as described in the Final Office Action would be entirely inconsistent with the open/closed and pumping operations described above.

As Evans clearly does not disclose each and every limitation of the Group I claims, it is requested that the § 102 rejection be reversed.

2. The Group I Claims are Not Obvious.

The only claims in Group I that were rejected as obvious are claims 51 and 52. It is submitted that these claims are not obvious because the claim from which they depend (claim 23) is novel, as described above. To the extent these claims are still asserted to be obvious, that contention is addressed below.

C. The Rejections of the Group II Claims Should Be Reversed.

1. The Group II Claims are Not Anticipated.

The Final Office Action rejected claims 24, 25, 31, 32, 42, and 44 of Group II as anticipated by Evans. These rejections should be reversed.

Each of the claims of Group II requires that the plunger, piston, and sleeve components are "constructed and arranged to provide all metering positions from a fully closed position to a fully open position." As described above in connection with the anticipation rejections of the Group I claims (see Section VIII.B.1), Evans does not disclose this feature. These rejections are, therefore, improper and should be reversed.

2. The Group II Claims are Not Obvious.

The Final Office Action rejected Group II claims 24, 25, 29, 31-38, 42, and 44 under 35 U.S.C. § 103(a) as being obvious over Shank in view of Schmidt or Evans. The Final Office Action also rejected Group II claims 30 and 55 as being obvious over Shank in view of Schmidt or Evans and in further view of Bey.

These rejections should be reversed because there is no proper combination of references that contains all of the claim limitations of independent claim 24 including, in particular, that the plunger, piston, and sleeve are "constructed and arranged to provide all metering positions from a fully closed position to a fully open position."

As described above, Shank discloses a media control valve of the on/off type. The Final Office Action takes the position that it would have been obvious to add to Shank a disclosure of Schmidt of "employ[ing] a metering piston 65, metering flow . . . for the purpose of regulating the flow of media through the valve." The Final Office Action further states that Evans shows that it was known to employ a metering piston operated by air pressure.

One of skill in the art would not have combined Shank and Schmidt (or Evans) to arrive at independent claim 24, as suggested by the Final Office Action and, even if the combination was made, the combination would not contain all of the elements recited in claim 24.

As set forth in MPEP § 2143, three criteria must be met in order to establish a prima facie case of obviousness. First, the reference(s) must teach or suggest all of the claimed features. Second, there must be some specific suggestion or motivation, either in the cited reference(s) or in the knowledge generally available to one of ordinary skill in the art, to modify the reference(s). Third, there must be a reasonable expectation of success. The specific teaching or suggestion to modify the reference(s), as well as the reasonable expectation of success, must both be found in the prior art and not based on Applicants' disclosure. See In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

None of the three criteria is met in this case.

To support an obviousness rejection, there must be a specific motivation to change the prior art to fall within the scope of the claims. In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999) (reversing rejection because specific motivation in the prior art not identified). Without a clear

and particular identification of a suggestion, teaching, or motivation in the prior art to modify a reference, the rejection cannot be maintained. Id.

The device of Schmidt relies on the ability to move the valve element 65 in incremental amounts by means of the threads on threaded shaft 80. There is no suggestion in the cited prior art to combine to threaded approach of Schmidt with the on/off valve of Shank, and the Final Office Action does not point to any. This is likely because the threaded valve element of Schmidt would not work in the on/off device of Shank, as they are distinctly different types of media valves. In any event, this is classic example of improperly using the applicant's disclosure as a template to arrive at the claimed invention. See Crown Operations Int'l, Ltd. v. Solutia Inc., 289 F.3d 1367, 1376 (Fed. Cir. 2002) (explaining that "obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention").

In fact, it would be impermissible to replace the plunger and piston assembly of Shank with the threaded shaft 80 and valve element 65 of Schmidt, because to do so would be to change the principal of operation of the primary reference (from on/off to threaded). See MPEP § 2143.02 ("If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." (citing In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

For the same reason, there would have been no reasonable expectation of success in making this combination. There is nothing to suggest that the threaded adjustment of Schmidt could or would work in on/off valve of Shank.

Finally, even if the combination could be properly made, any operable device that added the variable flow feature of Schmidt to the valve of Shank would not contain all of the elements of claim 24. Without including Schmidt's threaded shaft 80 and incremental valve element 65, there would be no reason to make the combination because there would be no ability to vary the flow. There is no teaching in Schmidt of how to make an incremental valve without a threaded member. On the other hand, adding the threaded shaft 80 and incremental valve element 65 of Schmidt to Shank, Jr. would result in a device that does not have the claimed plunger and piston.

Thus, a combination of Shank and Schmidt, even if proper, would not contain all of the elements of claim 24.

Evans, as described above, is also an on/off type valve and would not, therefore, add the feature of providing all metering positions from a fully closed position to a fully open position to the valve of Shank.

With respect to claims 30 and 55 (the only Group II claims rejected based on the combination including Bey), it is submitted that they are patentable as depending from patentable claim 24.

The Final Office Action has failed to satisfy any of the three elements required to establish a prima facie case of obviousness of the Group II claims. Because failure to meet any one of these elements is sufficient to render such a rejection improper, the rejection is plainly erroneous. It is respectfully submitted that claim 24 is patentable over Shank in view of Schmidt or Evans and that the § 103(a) rejection the Group II claims should be reversed.

D. The Rejections of the Group III Claims Should Be Reversed.

The Final Office Action rejected Group III claims 45-47, 56, 58, and 59 as being anticipated by Evans. The Final Office Action also rejected these same Group III claims as being obvious over Shank in view of Schmidt or Evans. Group III claim 57 was rejected as being obvious over Shank in view of Schmidt or Evans and in further view of Bey.

These rejections should be reversed.

1. The Group III Claims are Not Anticipated.

The Group III claims are not anticipated by Evans for the same reason that the Group I claims are not anticipated. Each of the Group III claims includes the limitation that the media control valve is "air actuated and is constructed and arranged to provide all metering positions from a fully closed position to a fully open position." As this claim element is not found in Evans (see Section VIII.B.1), Evans is not anticipatory and these rejections should be reversed.

2. The Group III Claims are Not Obvious.

The Group III claims are not obvious over Shank in view of Schmidt or Evans for essentially the same reasons that the Group II claims are not obvious. There is no suggestion (other than in the applicant's disclosure) to combine Shank with Schmidt, and there would be no reasonable expectation of success in making any such combination. (See Section VIII.C.2.)

(Because Group III claims 45-47, 58, and 59 do not require a plunger, a piston, or a sleeve, the argument that the combination would not include all claim elements does not apply.)

Independent claim 45 and its dependent claims are therefore patentable over Shank and Schmidt. Further, as described above, Evans does not cure the problems with this combination, as it does not allow all metering positions. (See Section VIII.C.2.)

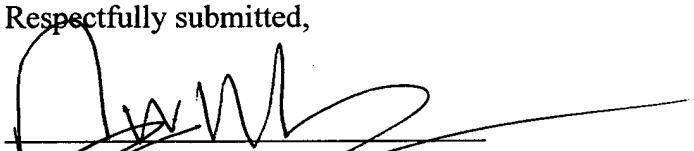
Claim 56 is patentable as depending on patentable claim 45. It is also patentable over the asserted combination because it requires a piston, and no operable combination of Shank and Schmidt would have this feature. (See Section VIII.C.2.)

For the foregoing reasons, it is submitted that the § 103 rejections of the Group III claims should be withdrawn.

IX. Conclusion

For the foregoing reasons, each of the rejections of the claims was improper and should be reversed.

Respectfully submitted,



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X. Appendix: Claims as Appealed (37 C.F.R. § 1.192(c)(9))

Claims 23-25, 29-38, 42-47, and 50-59 are pending in the application and stand rejected.

23. A media control valve, comprising:

a body having a media inlet and a media outlet;

a flow path within the body including the media inlet and the media outlet;

an air-actuated closing member positioned within the body and constructed and arranged to provide all metering positions from a fully closed position to a fully open position.

24. A media control valve, comprising:

a valve body having a media inlet and a media outlet;

a plunger positioned within the valve body;

a sleeve positioned within the valve body;

a media opening in the sleeve;

a housing connected to the valve body;

a piston positioned within the housing and connected to the plunger; and

a base connected to the valve body in communication with the media outlet;

wherein the plunger, the piston, and the sleeve are constructed and arranged to provide all metering positions from a fully closed position to a fully open position.

25. The valve of claim 24, wherein the base comprises a unitary structure including a fluid passage and an attachment mechanism adapted to attach the base to the valve body.

29. The valve of claim 24, wherein the media opening comprises a first portion proximate to the media outlet and a second portion distal to the media outlet and wherein the second potion is broader than the first portion.

30. The valve of claim 24, wherein the piston is convex in the direction of the valve body.

31. The valve of claim 24, further comprising at least one seal between the plunger and the valve body adapted to resist the passage of one of media, fluid, contaminants, and combinations thereof between the valve body and the housing.

32. The valve of claim 24, comprising three seals positioned between the plunger and the valve body.

33. The valve of claim 32, wherein the three seals are constructed as a unitary piece.

34. The valve of claim 24, wherein the housing comprises an exhaust chamber including a vent.

35. The valve of claim 34, wherein the vent comprises a filter.

36. The valve of claim 35, wherein the filter is adapted to filter particles greater than about 20 microns in diameter.

37. The valve of claim 24, wherein the valve body and the housing comprise two distinct structures adapted to be joined together.

38. The valve of claim 37, wherein the valve body and housing comprise a mating structure.

42. The valve of claim 24, further comprising a valve seat.

43. The valve of claim 42, wherein the valve seat comprises an elastomer.

44. The valve of claim 24, further comprising means for providing a gentle seal.

45. A media control system comprising:

a media vessel;

an air flow path;

a media flow path including a media inlet connected to the media vessel and a media outlet connected to the air flow path; and

a media control valve positioned on the media flow path; wherein

the media control valve is air actuated and is constructed and arranged to provide all metering positions from a fully closed position to a fully open position.

46. The media control system of claim 45, wherein the media flow path axis is substantially perpendicular with respect to a surface upon which the media control system rests.

47. The media control system of claim 45, wherein the media flow path axis is substantially perpendicular to an axis of the air flow path.

50. The valve of claim 23, further comprising a piston connected to the closing member

51. The valve of claim 50, wherein the piston comprises a contaminant isolation region.

52. The valve of claim 51, wherein the piston is convex in the direction of the valve body.

53. The valve of claim 23, further comprising a gentle seal.

54. The valve of claim 23, wherein the flow path has a substantially linear axis.

55. The valve of claim 24, wherein the piston comprises a contaminant isolation region.

56. The valve of claim 45, wherein the media control valve comprises a piston.

57. The valve of claim 56, wherein the piston comprises a contaminant isolation region.

58. The valve of claim 45, wherein the media control valve further comprises a gentle seal.

59. The valve of claim 45, wherein the media flow path has a substantially linear axis.